

Innovation for the next generation



Automated Transceiver Test Solutions

ML7007 Series Productivity Software

Applications: Compliance Testing | Transceiver Manufacturing | Return Merchandise Authorization (RMA) | Characterization & Validation | Failure Analysis

Summary

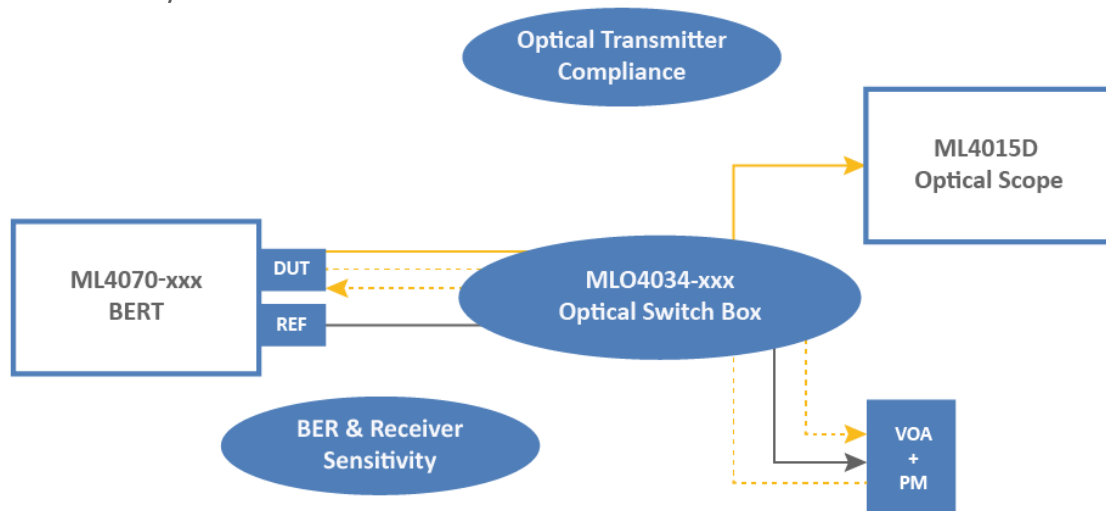
100G CWDM4 and PSM4 have arrived at the data center in large volumes. As a result, testing optical transceivers has become four times more time-consuming and complex. To streamline this process, we have developed our ML7007 software, an automated platform that orchestrates the test process. Used in combination with our MLO4034 optical switch box, the software can fully characterize a device with no need for human intervention. The ML7007 Series is fully automated, runs complete test programs, generates test reports, provides pass/fail determination and makes all the connections without manual intervention.

Applications:

- Supports 10G to 100G Transceivers
- Optical Transceiver test
 - Optical Transmitter testing
 - BER and Receiver Sensitivity testing

Overview

With the single push of a button, testing both the optical transmitter parameters and bit error rate receiver sensitivity of an optical transceiver are made possible. The ML7007 Series *Productivity* automation software runs on a laptop, controls the test equipment, executes the tests and generates a summary test report with pass/fail information, without any human intervention. Below is a schematic of the test functionality.



The setup enables optical compliance testing of the DUT transmitter and receiver. Transmitter testing comprises test parameters such as extinction ratio, eye diagram mask margin, and optical modulation amplitude. Receiver testing measures the bit error rate as a function of received optical power. In addition to using the DUT transmitter, a reference transmitter can be used for the receiver sensitivity test. The connections are made automatically using a MLO4034-xxx Optical Switch Box. The ML7007 solution uses an optical sampling oscilloscope, the ML4015D, for the optical transmitter test measurements. The ML4070-xxx BERT host emulator margin tester provides a quick and accurate solution for receiver and transmitter characterization of SFP and QSFP28 modules. The MLO4034 complements the test setup on the optical side with its integrated optical switches, power monitors and variable optical attenuators. The ML7007 Series consists of the combination of all three instruments coupled with the automation software.

The solution is intended for return merchandise authorization (RMA) testing, new supplier validation, optical transceiver characterization, failure analysis of faulty transceivers and pass/fail determination in final stages of manufacturing.

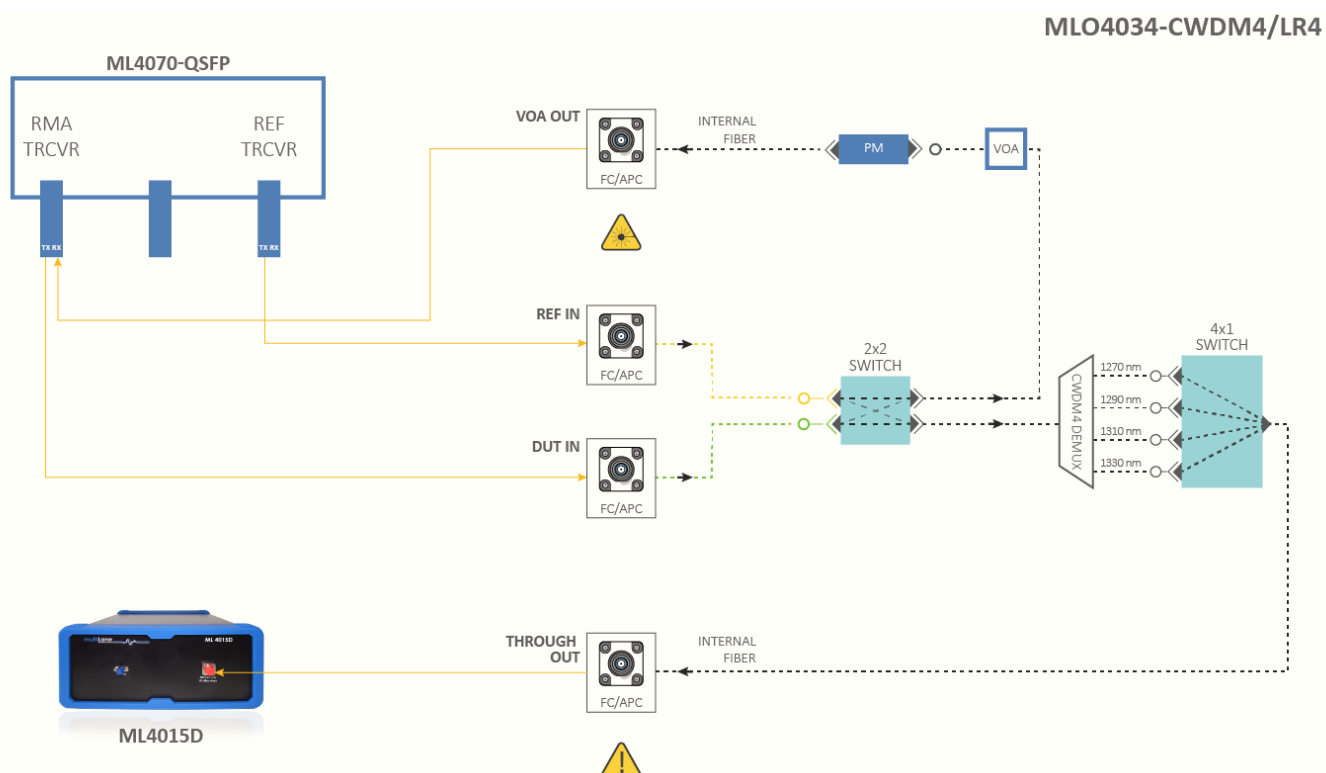
The ML7007 Series is a suitable solution for:

- Data center hardware equipment manufacturers
- Data center and cloud infrastructure providers
- Transceiver manufacturers and their contract manufacturers

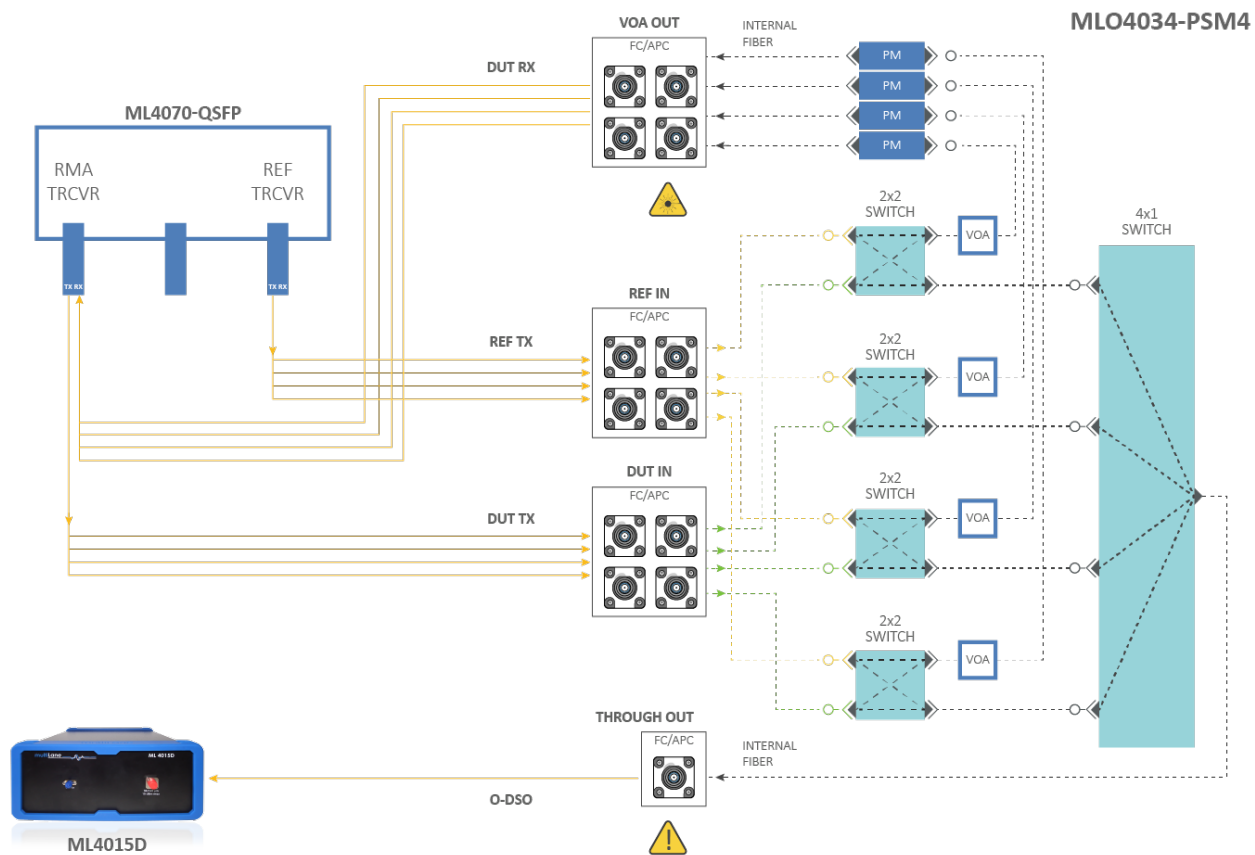
Detailed Configuration:

This solution supports the testing of multi-wavelength transceivers, as well as parallel fiber transceivers. Single wavelength, single fiber transceivers can also be tested with the parallel fiber solution of the same fiber (single mode or multi-mode). As a result, the ML7007 supports most of the common SM and MM 10, 25, 40 and 100G SFP/QSFP transceivers. Below are examples with the ML4070-QSFP BERT.

Quad Wavelength Transceivers



Quad Parallel Fiber Transceivers



Supported Tests - Examples

Optical Transmitter Compliance tests	BER and Receiver Sensitivity tests
Eye diagram, mask margin	Eye contour
Eye width, eye height, rise/fall time	Bathtub curve
OMA, AOP, ER	Rx sensitivity waterfall curve (BER vs. ROP, BER vs. OMA)
VECP, TDEC	

Supported Standards*/ Required Equipment

PMD / Standard	Margin Tester	Optical Scope	Optical Switch Box
SFP-10G-LR	ML4070-SFP	ML4015D-25-SM	MLO4034-PSM4
SFP-10G-SR	ML4070-SFP	ML4015D-25-MM	MLO4034-SR4
QSFP-40G-PLRL4	ML4070-QSFP	ML4015D-25-SM	MLO4034-PSM4
QSFP-40G-SR4	ML4070-QSFP	ML4015D-25-MM	MLO4034-SR4
QSFP-100G-LR4	ML4070-QSFP	ML4015D-25-SM	MLO4034-LR4
QSFP-100G-SR4	ML4070-QSFP	ML4015D-25-MM	MLO4034-SR4
QSFP-100G-CWDM4	ML4070-QSFP	ML4015D-25-SM	MLO4034-CWDM4
QSFP-100G-PSM4	ML4070-QSFP	ML4015D-25-SM	MLO4034-PSM4

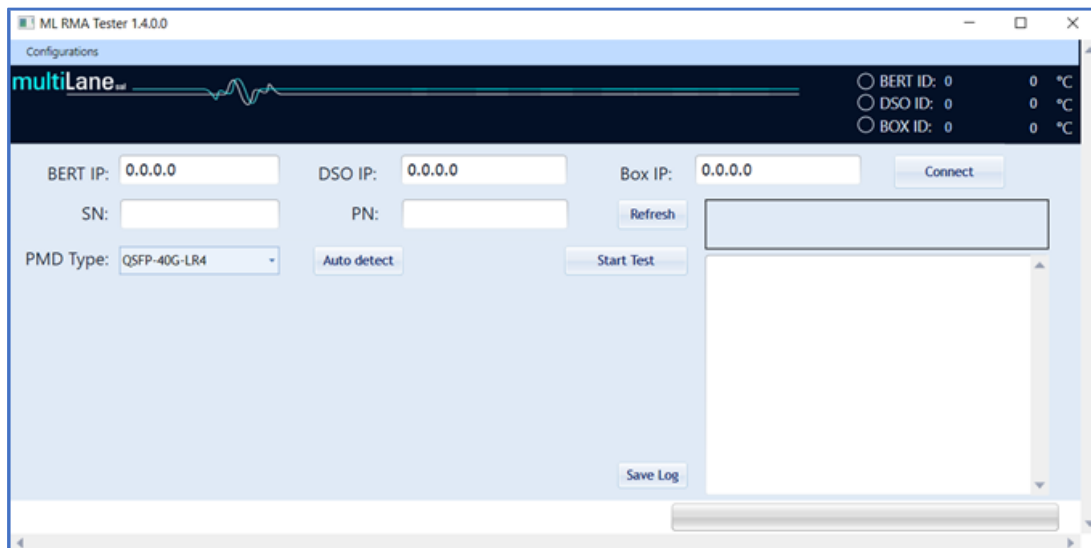
All standards require an option of the ML7007 Series Productivity automation software. Currently 400G solutions are under development.

*Other standards supported upon request. Please contact sales@multilaneinc.com

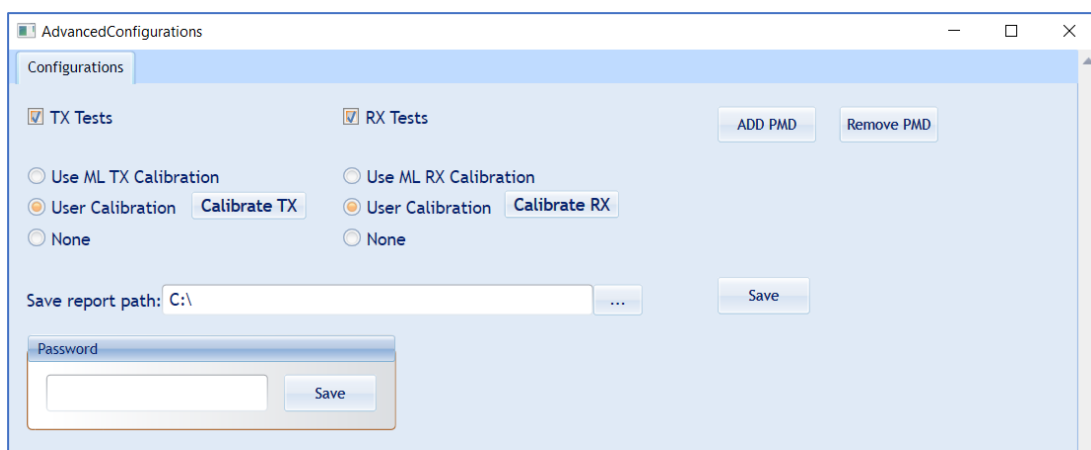
Graphical User Interface

Please see below for examples of the GUI to control the ML7007 software.

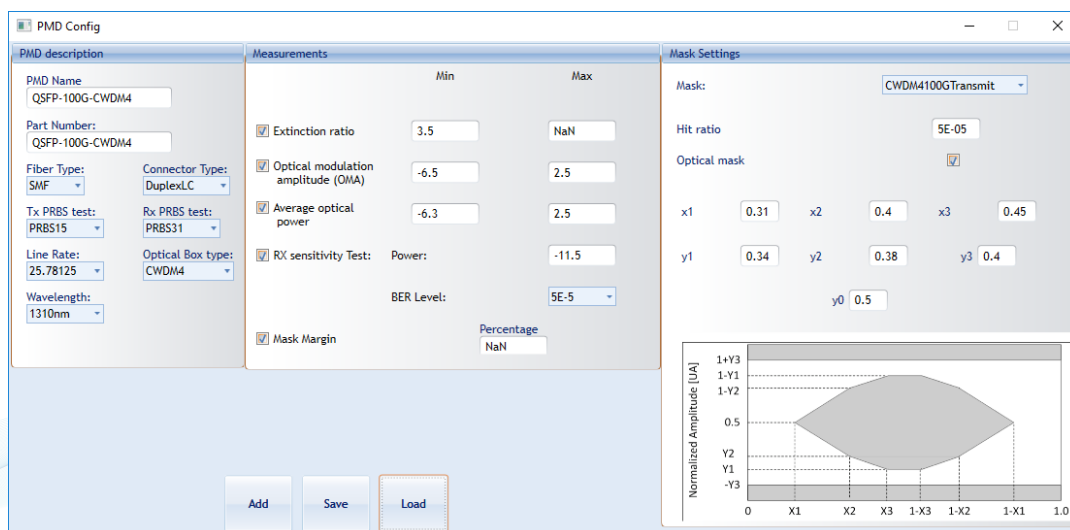
Main Window



Configuration Window



PMD Window



Ordering Information

Please refer to the supported standards and required equipment section. The table below provides some examples.

<i>PMD / Standard</i>	<i>Required equipment and software</i>
SFP-10G-LR	ML7007-100G, ML4070-SFP, ML4015D-25-SM, MLO4034-PSM4
QSFP-40G-SR4	ML7007-100G, ML4070-QSFP, ML4015D-25-MM, MLO4034-SR4
QSFP-100G-LR4	ML7007-100G, ML4070-QSFP, ML4015D-25-SM, MLO4034-LR4
QSFP-100G-PSM4	ML7007-100G, ML4070-QSFP, ML4015D-25-SM, MLO4034-PSM4

<i>Application</i>	<i>Required Software Option</i>
Return merchandise authorization (RMA) testing	ML7007-100G

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